

ABSTRACT

A composite structure contains crystalline and/or polycrystalline triboluminescent elements distributed therein externally and/or internally, totally and/or regionally. The structure is instrumented with at least one optical fiber which is coupled therewith penetratingly and/or superficially/tangentially. Each optical fiber is exteriorly light transparent/translucent along at least a longitudinal portion thereof which is situated in the vicinity of at least one triboluminescent element. Concomitant with the occurrence of damage in and/or on the structure is the occurrence of mechanical action with respect to at least one triboluminescent element, a consequence of which is the occurrence of triboluminescence which, to at least some degree, passes radially into at least one optical fiber so as to reach the optical fiber's transmissive axial core and thereby be transmitted to remotely located photosensitive equipment. The triboluminescent elements can exist wholly and/or partly in various capacities, e.g., as fiber reinforcement and/or particle reinforcement and/or particle filler.